ARISE - C-130 Hercules 09/10/14 Science Report

Aircraft:
C-130H Hercules #439 (See full schedule)
Date:
Wednesday, September 10, 2014
Mission:
ARISE
Mission Location:
Arctic Ocean
Mission Summary:

MIZ Lawnmower - Flt 6

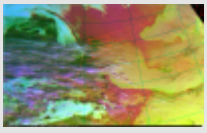
The C-130 flight scientist today was Jens Redemann (NASA ARC). The objectives for this flight were to (1) characterize the sea-ice with LVIS from the edge to an area with high concentrations (as indicated from AMSR) near 76.5N 126W, and (2) make observations of the radiative and microphysical properties of clouds across the ice edge during Terra (21:21) and Aqua (21:42) overpasses in a square grid box with a 5-leg lawnmower pattern. Both objectives were successfully achieved. A survey across the planned gridbox prior to the beginning of the LVIS run revealed scattered mid- and high-level clouds in the area with low clouds below. The optically thicker low clouds appeared to be in the southern part of the gridbox. Just to the east, the C-130 encountered mostly clear conditions along the NE and SW LVIS zigzag, which provided an excellent sea-ice characterization. Dissipating scattered and broken multi-layer cloud conditions including areas of fog confounded the planned lawnmower pattern. An excerpt fro the flight scientist's notes regarding the area for the planned lawnmower pattern:

?Complex cloud situation, with generally more Ci towards the S edge of lawnmower box and low clouds thickening towards SW corner of pattern. Decided to skip some of the E-W legs in lawnmower pattern to get away from Ci to the S. Flew 3 E-W legs and found low level clouds to be highly variable at Aqua OP time, but target area is generally clear at NE corner of pattern. At NW corner of lawnmower pattern, we decided to head due S to find thicker low clouds again. Found homogeneous low-cloud deck under relatively thin Ci. Flew above cloud deck for radiometry (~5 mins), reversed course and dropped into same cloud deck for in situ measurements. Then decided to head W to explore gradients in cloud and sea-ice surface properties. Found low-clouds and sea-ice to be highly variable, sometimes apparently correlated with each other. Many data sets need to be post-processed to assess quality and utility to address science objectives. ?

The flight scientist and pilots did an excellent job of altering the flight track to find good low-level cloud targets while trying to avoid upper-level clouds as much as possible. All of the C-130 instrumentation worked well but ground communication via the MTS system did not work the entire flight.

Images:

September 10, 2014 Figure 1



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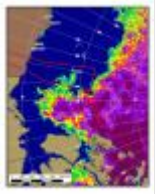
September 10, 2014 Figure 2



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Submitted by:
William L. Smith Jr. on 09/13/14
Related Flight Report:

C-130 Hercules 09/10/14 - 09/11/14

Flight Number:
MIZ Lawnmower - Flight #6
Payload Configuration:
ARISE
Nav Data Collected:
No
Total Flight Time:
8.8 hours
Submitted by:
Cate Easmunt on 09/10/14
Flight Segments:

From:	PAEI	**To:**	PAEI
Start:	09/10/14 17:10 Z	**Finish:**	09/11/14 01:55 Z
Flight Time:	8.8 hours		
Log Number:	141002	**PI:**	Christy Hansen
Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		

Purpose of Flight:	Science

Flight Hour Summary:

	141002	151004
Flight Hours Approved in SOFRS	229	
Flight Hours Previously Approved		88.7
Total Used	140.3	18.2
Total Remaining		70.5

151004 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining
10/02/14 - 10/03/14	Cal Flight	Science	8.6	8.6	80.1
10/04/14	Transit	Transit	9.6	18.2	70.5

Source URL: https://airbornescience.nasa.gov/science_reports/ARISE_-_C-130_Hercules_09_10_14_Science_Report?destination=node/24538

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

141002 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining
08/24/14	Engineering Check Flight	Check	2.8	2.8	226.2
08/29/14	Boom Calibration Flight	Check	0.5	3.3	225.7
08/30/14	Project Check Flight	Check	5.2	8.5	220.5
09/01/14	Transit (1 of 2)	Transit	8.7	17.2	211.8
09/02/14	Transit (2 of 2)	Transit	6.6	23.8	205.2
09/04/14 - 09/05/14	Arctic Ocean - Flight #1	Science	6.6	30.4	198.6

09/05/14 - 09/06/14	140W Sea Ice - Flight #2	Science	7.1	37.5	191.5
09/06/14 - 09/07/14	Ice ZigZag-Terra - Flight #3	Science	7.1	44.6	184.4
09/07/14 - 09/08/14	CERES Gridbox - Flight #4	Science	8.4	53	176
09/09/14 - 09/10/14	CERES Gridbox - Flight #5	Science	7.7	60.7	168.3
09/10/14 - 09/11/14	MIZ Lawnmower - Flight #6	Science	8.8	69.5	159.5
09/11/14 - 09/12/14	CERES Gridbox - Flight #7	Science	7.5	77	152
09/13/14 - 09/14/14	CERES Gridbox - Flight #8	Science	8.3	85.3	143.7
09/15/14 - 09/16/14	CERES Gridbox - Flight #9	Science	8.1	93.4	135.6
09/16/14 - 09/17/14	Radiation Wall Pattern - Flight #10	Science	8.3	101.7	127.3
09/17/14 - 09/18/14	CERES Gridbox - Flight #11	Science	7.2	108.9	120.1
09/18/14 - 09/19/14	Sea Ice Albedo/CryoSat - Flight #12	Science	8.6	117.5	111.5
09/19/14 - 09/20/14	Radiation Wall Pattern - Flight #13	Science	8.3	125.8	103.2
09/21/14 - 09/22/14	Sea Ice & Radiation - Flight #14	Science	8.2	134	95
09/24/14 - 09/25/14	Gridbox TOA+Surface - Flight #15	Science	6.3	140.3	88.7